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Some Psammobiotic Water Mites of Lake Biwa[1)][2)]

With 4 Text-figures

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(*Communicated by* T. UCHIDA)

ABSTRACT Three species of interstitial hydrachnid mites, as listed below, are described in the present paper from a sandy beach of Lake Biwa, Shiga-ken, Japan. This will be the first record of the psammobiotic hydrachnid mites from lake beaches.

Axonopsinae Viets, 1929
1) *Albaxona japonica* n. sp.
2) *Lethaxona* sp.
3) *Axonopsis* (*Hexaxonopsis*) *suberranea* Uchida et Imamura, 1953

Many water mites (Hydrachnellae and freshwater Halacaridae) of ground and subsurface waters have hitherto been recorded from Europe, the Orient and from North America, and a few were reported from Africa and South America. But, so far as the author is aware, there has been no record on the interstitial water hydrachnids from the sandy beaches of lakes and ponds, as Cook (1969, p. 82) has witten, "The interstitial waters associated with lakes and ponds are almost completely lacking in water mites." In this time, Mr. Yoshifumi Miura, director of the Kakogawa Nishi High School, Hyogo-ken, collected some psammobiotic hydrachnids together with harpacticoid copepods and the other psammitic animals from a sandy beach of Lake Biwa, located nearly at the center of Japan's Main Island, and he entrusted the author with the examination of all these hydrachnid specimens in a vial. After careful examination, the author found that the collection contained three species belonging to a subfamily Axonopsinae as written below, and the descriptions on the species will be given in this paper. This will be the first report on the psammitic hydrachnid mites from the beaches of a lake. The specimens

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described here are all deposited in the collection of the Department of Biology, Faculty of Science, Ibaraki University, Mito.

Locality and the List of Species Obtained

In a sandy beach of Lake Biwa at Shirahigé, Shiga-ken, on the western shore of the lake; 15–X–1967, collected by Y. Miura.

Axonopsidae Viets, 1929
  Axonopsinae Viets, 1929
    1) *Albaxona japonica* n. sp., 5 ♂♂ and 4 ♀♀.
    2) *Lethaxona* sp., 3 ♀♀.
    3) *Axonopsis* (*Hexaxonopsis*) *subterranea* Uchida et Imamura, 1953, 1 ♂, 1 ♀ and 1 nymph.

Albaxona japonica n. sp.

(Figures 1 and 2)

Female. Body long ellipsoidal in outline, measuring 290 μ long, excluding epimera, and 175 μ wide. Skin soft, colorless and finely striated. Dorsal shield 275 μ long and 135 μ wide, bearing four pairs of glandularia and one pair of postocularia as shown in Fig. 1, b. Eyes reduced in size and 85 μ distance in their interval. Five pairs of glandular platelets arranged on the outside of dorsal shield. Maxillary organ rather small, measuring 75 μ long and 36 μ wide. Palps bearing

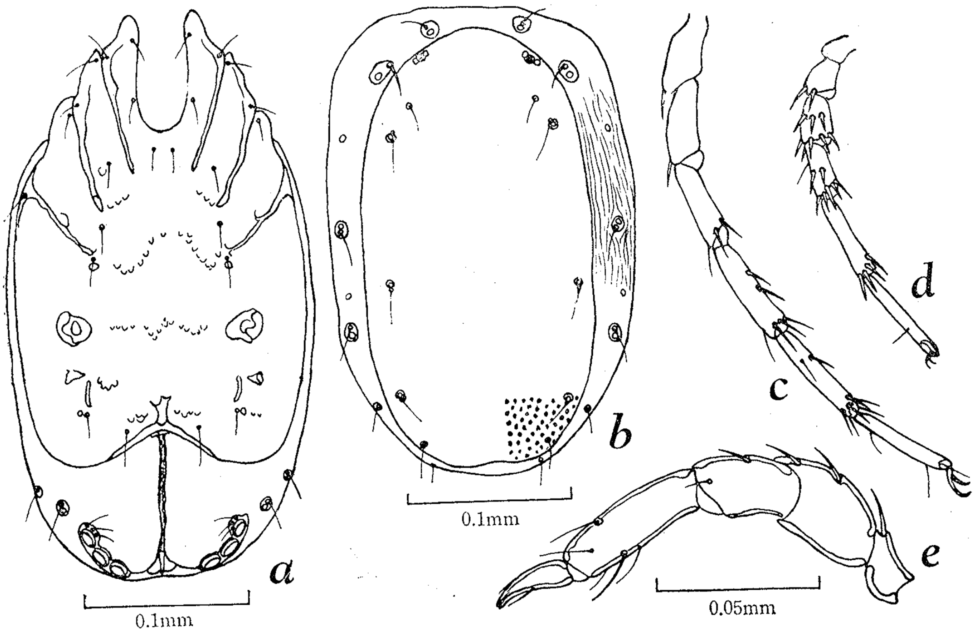

Fig. 1. *Albaxona japonica* n. sp., female: a, venter; b, dorsum; c, right IVth leg; d, right IInd leg; e, right palp.

rather few hairs and spines. P. II with two spines on the dorsal surface. P. IV having two slender hairs on the dorsal and three hairs on the ventral surfaces. Palps measured segments in μ as shown in Table 1.

Table 1

Palps	I	II	III	IV	V
Extensor surface	15	33	24	48	24
Height	12	21	17	15	—

Mandibles 126 μ long, including a claw. Anterior portions of epimera I and II projecting beyond the anterior body margin. Feature of epimeral shield as shown in Fig. 1, a, measuring 250 μ long and 168 μ wide. Pedal lengths: L. I, 250 μ; L. II, 200 μ; L. III, 220 μ and L. IV, 330 μ. Legs I and IV longer than legs II and III. Legs with some spines but having no swimming hairs. Legs II and IV as illustrated in Fig. 1, d and c. Claws of legs all of simple sickle-shape. Ventral shield with a rather deep genital bay. Gonopore very large, 72 μ long. Three pairs of genital acetabula, each arranging almost in a line and slightly curved outwardly. A pair of glandularia lying just anterior to the genital plates.

Male. Body and organs almost same as those of the female, except for the epimeral shield and the genital area. So, the measurements will only be given as below. Body 282 μ long, excluding epimera, and 195 μ wide. Interval between eyes 80 μ. Dorsal shield 275 μ long and 140 μ wide. Maxillary organ 70 μ long and 30 μ wide. Maxillary bay 57 μ deep and 33 μ wide at the anterior portion. Palps measured in μ as shown in Table 2.

Table 2

Palps	I	II	III	IV	V
Extensor surface	15	36	22	45	22
Height	12	21	17	15	—

Ventral shield comparatively larger than that of the female, with its posterior margin reaching near the posterior body margin. Genital organ located on the ventral shield at the extreme posterior. Acetabular plates each with three acetabula and eleven minute hairs. Gonopore 36 μ long. Penis is as shown in Fig. 2, measuring 75 μ long and 45 μ wide. Anus located just behind the genital organ on the outside of the ventral shield. A pair of glandular platelets lying on the lateral side of the anus.

Type-series. Holotype, Prep. 1676, female; allotype, Prep. 1678, male; paratypes, 4 males and 3 females (collected by Y. Miura).

Type-locality. Interstitial in a sandy beach of Lake Biwa at Shirahigé, Shiga-ken.

Remarks. Two species of *Albaxona, A. gracilis* Schwoerbel and *A. minuta*

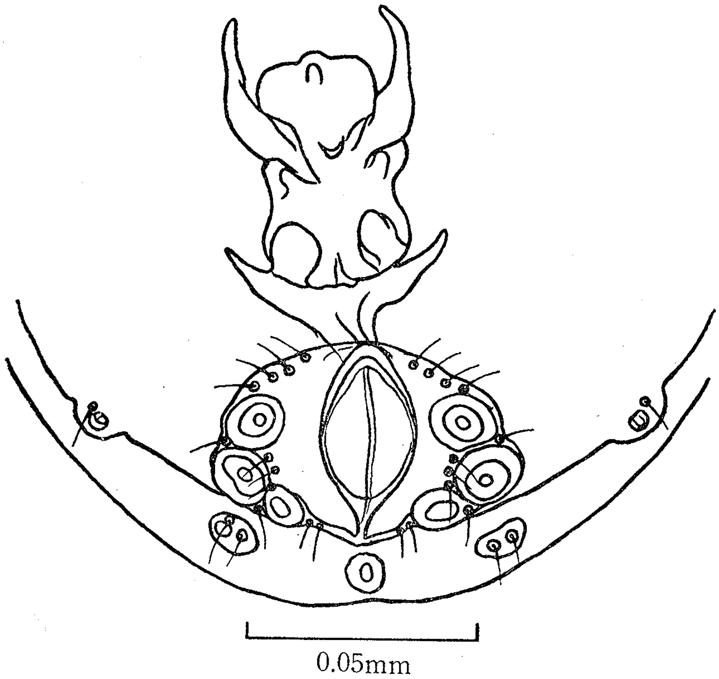

Fig. 2. *Albaxona japonica* n. sp., genital area of male.

Szalay, are known from the ground water habitat in Europe and one, *A. stoka* Cook, is reported from the interstitial water habitats associated with stream sand and gravel deposits in India. The Japanese species is clearly distinguished from these three species by the shape of the genital plates of both sexes. The genus *Albaxona* is new to Japan.

Lethaxona sp.
(Figure 3)

Female. Body oval in outline, 330 μ long and 225 μ wide. Eyes reduced, with their interval being 52 μ. Dorsum occupied with a main plate and nine pairs of accessory plates which surround the main plate. Dorsal main plate oval in outline, measured 290 μ long and 190 μ wide, and with two pairs of glandular pores as shown in Fig. 3, a. Ventral shield 270 μ long and the feature as shown in Fig. 3, c. Maxillary bay rather narrow and 50 μ in depth. Maxillary organ 70 μ long. Palps measured in μ as shown in Table 3.

Table 3

Palps	I	II	III	IV	V
Extensor surface	12	27	15	37	24
Height	15	21	18	17	9

P. II thickest and with three spines, one of which is feathered. Shape of palp as shown in Fig. 3, b. Mandibles 63 μ long, including a calw. Lengths of legs:

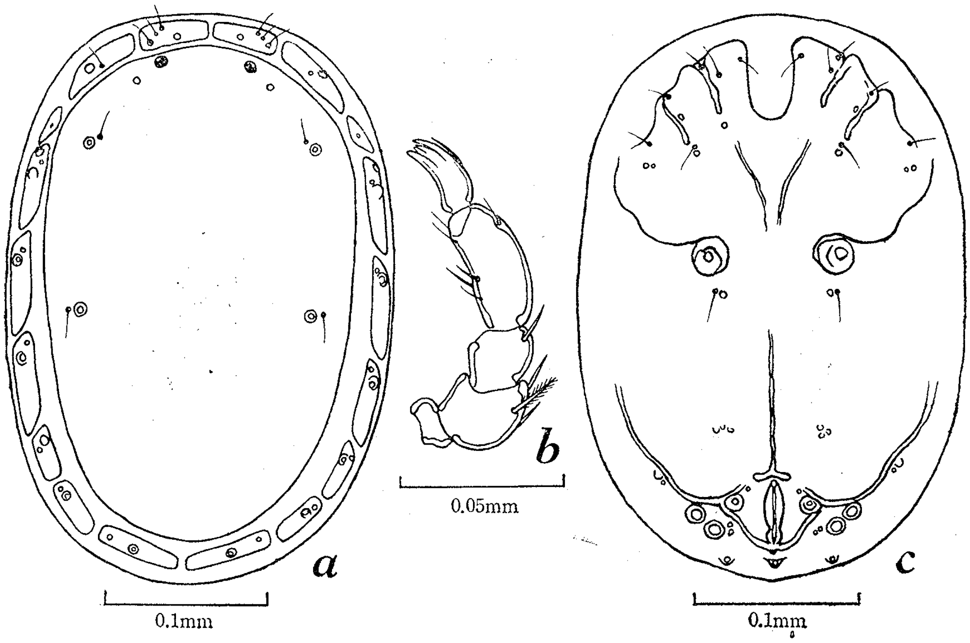

Fig. 3. *Lethaxona* sp., female: a, dorsum; b, left palp; c, venter.

L. I, 240 μ; L. II, 210 μ; L. III, 230 μ and L. IV, 320 μ. Genital area provided with three pairs of acetabula arranged as shown in Fig. 3, c.

Specimens examined. 3 females (collected by Y. Miura).

Remarks. Though the female resembles those of *L. hyogoensis* Imamura and *L. mikawaensis* Imamura, which are found from wells in Hyogo-ken, bordering on Shiga-ken, it is a little different in the body shape and in the fourth segments of palps. The female is also akin to the European species, *L. pygmaea* Viets, and the Indian species, *L. kutapalpis* Cook, but it will be difficult to identify this group only by the female specimens. So, the present author wishes to defer the deciding of the specific name until the male is found.

Axonopsis (*Hexaxonopsis*) *subterranea* Uchida et Imamura
(Figure 4)

Axonopsis (*Hexaxonopsis*) *subeterranea* Uchida et Imamura, 1953, J. Fac. Sci., Hokkaido Univ., Ser. VI, Zool., 11, 519–522.

Nymph. Body oval in shape, measured 190 μ long and 140 μ wide. Dorsal shield elliptical, 135 μ long and 90 μ wide, and with three pairs of hairs and a pair of glandularia. Three pairs of glandularia surround the dorsal shield as shown in Fig. 4, a. Maxillary organ, palps and legs all almost the same as those of the adults, except in having fewer spines and hairs. Palps measured in μ as shown in Table 4. Ventral shield almost elliptical in shape and relatively smaller than that of the adults. Provisional genital plates each with two acetabula and three minute hairs as shown in Fig. 4, b, measuring each 20 μ in length.

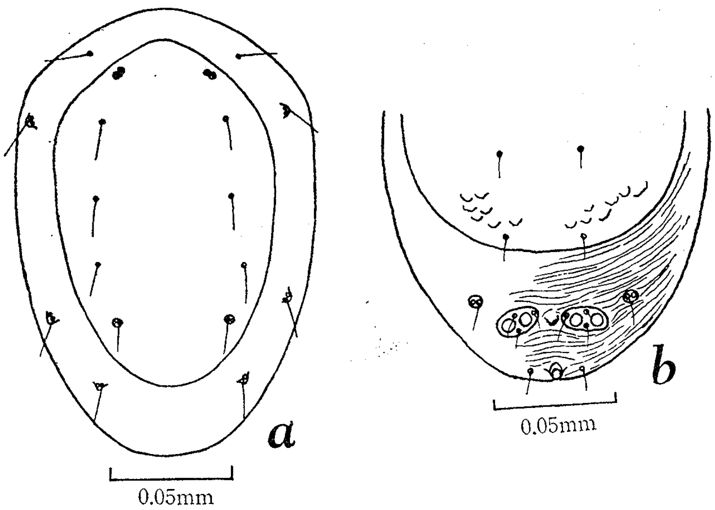

Fig. 4. *Axonopsis* (*Hexaxonopsis*) *subterranea* Uchida et Imamura, nymph: a, dorsum; b, posterior half of venter.

Table 4

Palps	I	II	III	IV	V
Extensor surface	15	27	12	33	15
Height	—	15	12	12	—

Specimens examined. One male, one female and one nymph (collected by Y. Miura).

Remarks. The present species is first reported by T. Uchida and T. Imamura in 1953 from the water works of Osaka City. Afterwards, the present author has collected the species several times from interstitial and hyporheic waters in rivers at some localities in Kantô District (yet unpublished). Thus the present species seems to be rather common in the subsurface waters in Japan.

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